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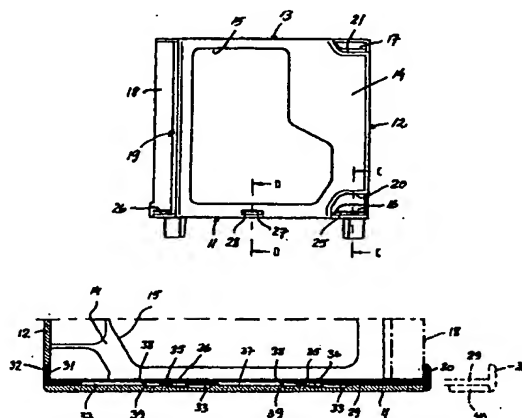
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ance Notes on Codes and Abbreviations" appearing at the begin-  
ning of each regular issue of the PCT Gazette.

(54) Title: ANTI-THEFT DEVICE FOR A PARALLELEPIPEDIC BOX



(57) Abstract: Anti-theft device for a parallelepipedic box for CD, DVD, MC, video tapes, data games, or the like, comprising a flat rectangular frame of plastic material, which has two flat sides (14; 16, 17, 18) and four mutually perpendicular narrow sides (11, 12, 13, 19) to enclose the box at the flat sides and three of the narrow sides (11, 12, 13). The fourth narrow side (19) is open for insertion of the box into the frame and withdrawal of the box therefrom. A slide (29) of plastic material is displaceable inside the frame along one (11) of the narrow sides perpendicular to the open narrow side (19), between an inserted lock position in which a hook-shaped end portion (30) of the slide blocks the open narrow side, and a projecting release position wherein this narrow side is uncovered. A latch device for locking the slide to the frame in the lock position comprises a plate (34) of magnetically attractable spring steel loosely placed in a depression (33) in said one narrow side (11) under the slide (29), said plate forming a tongue (35) projecting obliquely from the plate and directed from the open narrow side (19) to engage a shoulder (38) on the lower side of the slide in the lock position.

**Anti-theft device for a parallelepipedic box**

The invention relates to an anti-theft device for a  
5 parallelepipedic box for CD, DVD, MC video tapes, data  
games, or the like, comprising a frame of plastic material,  
which has two flat sides and four mutually perpendicular  
narrow sides to enclose the box at the flat sides and three  
10 of the narrow sides while the fourth narrow side is open  
for insertion of the box into the frame and withdrawal of  
the box therefrom, a slide of plastic material for retain-  
ing the box in the frame, which is located inside the frame  
and is plane-parallel with the narrow sides perpendicular  
15 and along one of said narrow sides between an inserted lock  
position and a retracted release position, the slide form-  
ing a hook-shaped end portion directed towards the interior  
of the frame, which blocks the open narrow side in the lock  
position of the slide, while this narrow side is uncovered  
20 in the release position of the slide, and a latch device  
for locking the slide to the frame in the lock position of  
the slide.

An anti-theft device of this kind is disclosed and  
described in US-A-5 147 034 wherein the latch device com-  
25 prises a pin which is mounted for axial displacement in the  
frame below the slide and is biased by a helical compres-  
sion spring in order to be kept engaged with an aperture in  
the slide when this is in the lock position thereof. In or-  
der to disengage the slide so that it can be displaced to  
30 the release position the pin is attracted to a magnet which  
is moved from the outside towards the frame, against the  
bias of the spring bias on the pin so that the pin will be  
withdrawn from the aperture in the slide.

Also WO-A1-98/36143 discloses and describes an anti-  
35 theft device of the kind referred to wherein the latch de-  
vice comprises an obliquely protruding spring tongue of a

magnetically attractable metal, which is attached to the frame at one end thereof and is directed from the open narrow side to engage at the other end thereof a shoulder on the slide on the lower side thereof when the slide is in lock position. In order to disengage the slide so that it can be displaced to the release position the spring tongue is attracted to a magnet which is moved towards the frame from the outside so that the spring tongue is disengaged from the shoulder on the slide.

10       The object of the invention is to further reduce the already low manufacturing cost for an anti-theft device of the kind referred to above while maintaining high demands on the security against unauthorized removal of the anti-theft device from the protected product. It has been realized that this cannot be done without robotizing the manufacture, which implies that the details of the anti-theft device are as few as possible and easily can be mounted together. This requirement is not fulfilled by a latch device as that disclosed in US-A-5 147 034 because the latch device comprises a pin and a spring which must be put together, nor by such a latch device as that disclosed in WO-A1-98/36143 because the spring tongue is attached to the frame.

25       In order to achieve the object mentioned the invention provides an anti-theft device of the kind referred to above having the characteristics of claim 1. In such an anti-theft device the latch device, i.e. the tongue which shall engage the lower side of the slide, is mounted in a very simple manner, viz. by the plate forming the tongue being placed loosely in the depression in the frame, which is a simple mounting step well suited for being performed by a robot.

30       In order to explain the invention in more detail an illustrative embodiment of the anti-theft device will be

described with reference to the accompanying drawing in which

- FIG. 1 is a side view of the anti-theft device as seen from one flat side thereof,
- 5 FIG. 2 is a side view of the anti-theft device as seen from the opposite flat side,
- FIG. 3 is an end view of the anti-theft device as seen from the open narrow side,
- FIG. 4 is an end view of the anti-theft device as seen from the opposite, closed narrow side, i.e. from the left in FIG. 2,
- 10 FIG. 5 is a cross-sectional view along line A-A in FIG. 2,
- FIG. 6 is an enlarged fragmentary cross-sectional view along line B-B in FIG. 5,
- 15 FIG. 7 is an enlarged fragmentary cross-sectional view along line C-C in FIG. 1,
- FIG. 8 is an enlarged fragmentary cross-sectional view along line D-D in FIG. 1,
- 20 FIG. 9 is an enlarged plan view of a plate forming a spring tongue,
- FIG. 10 is a central longitudinal cross-sectional view of the plate in FIG. 9, and
- FIG. 11 is a fragmentary longitudinal cross-sectional view of the slide and the frame at the left end of the slide in FIG. 6.
- 25

The anti-theft device disclosed in the drawing is intended for a parallelepipedic box or cassette enclosing a CD but the anti-theft device principally can be constructed in the same manner in order to be mounted on a box or cassette for DVD, MC, video-tape, data games, or the like. It comprises a flat rectangular frame which is injection moulded of a preferably glass-clear plastic, e.g. polycarbonate, but can also be made of another strong and for the purpose well-suited plastic. The frame has three closed

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narrow sides 11, 12 and 13, and two flat sides, one flat side thereof, FIG. 1, comprising a wall 14 forming an opening 15, and the other flat side, FIG. 2, comprising two corner portions 16 and 17 which connect the narrow sides 11 and 12 and 12 and 13, respectively, and a rail 18 which extends between the narrow sides 12 and 13 at right angles thereto. This rail defines together with the narrow sides 11 and 13 and the wall 14 an open narrow side 19 of the frame, the wall 14 at the open narrow side for manufacturing reasons being retracted in the longitudinal direction of the narrow sides 11 and 13. Also for manufacturing reasons openings 20 and 21 are provided in the wall 14 opposite to the corner portions 16 and 17.

The anti-theft device in a conventional manner shall be provided with an element which at movement through an electrostatic or electromagnetic field causes a disturbance of this field in order to trig an alarm. This element preferably is located on the inside surface of the wall 14.

On the inside surface of the wall 14 two guide ribs 22 and 23 are provided which extend in parallel with the narrow side 11 and project some distance above the upper side thereof. On the inside surface of the corner portion 16 and the rail 18 and on the inside surface of a flange 24 which extends along the narrow side 11, corresponding guide ribs 25, 26 and 27 are provided, an opening 28 for manufacturing reasons being provided in the wall 14 opposite to the guide rib 27. A flat slide 29 of plastic preferably the same plastic as that the frame 10 is made of, or some other plastic having properties which are particularly well suited for the slide, has a uniform width of such size that the slide fits between the wall 14 at one side and the corner portion 16 and the rail 18 at the other side and is located against the upper surface of the narrow side 11 below the guide ribs 22, 23, 25, 26 and 27. The slide is displaceable in the longitudinal direction thereof between a

lock position which is disclosed by solid lines in FIG. 6, and a release position which is disclosed by dotted lines in FIG. 6.

The slide has at the right end thereof as seen in FIG. 6 a flange 30 which projects at right angle from the slide on the upper side thereof as well as the lower side thereof, and in the lock position of the slide the downwardly directed part of the flange engages the end edge of the narrow side 11 and the upwardly directed part of the flange blocks the passage through the open narrow side 19. In the release position of the slide the flange 30 is spaced from the open narrow side 19 as indicated by dotted lines. At the left end the slide forms an upwardly directed flange 31 which forms a right angle with the slide and is received in a recess 32 in the narrow side 12 when the slide is in the lock position.

Two U-shaped shallow depressions 33 with plane bottom are provided in the narrow side 11. A plate 34 of spring steel has a centrally punched tongue 35 which is directed obliquely upwards from the plate such that the plate has U-shape with a web from which the tongue extends, and two limbs one at each side of the tongue. The shape of the plate is in agreement with the shape of the depressions 33, and in each of these depressions such a plate is loosely placed with the tongue 35 directed from the open narrow side 19. The portion of the narrow side 11 which is located under the tongue and between the limbs of the depression 33, raises successively from the bottom surface of the depression to the upper surface of the narrow side 11 from the right to the left as seen in FIG. 6. On the lower side of the slide two recesses 36 and 37 are provided for each tongue 35 said recesses being mutually spaced by a web 38 which ends at a distance from the lower side of the slide so that there is between the web and the narrow side 11 a gap 39 the size of which corresponds to the thickness of

the plate 34 or is insignificantly larger than said thickness. The tongue 35 of each of the plates loosely placed in the depressions 33 has the end thereof in the recess 36 and engages the web 38 when the slide is in the lock position, the tongues as a consequence thereof prevent displacement of the slide to the right as seen in FIG. 6 to the release position. The plate shall be of a spring steel which can be attracted magnetically, and by a magnet - permanent magnet or electro magnet - being moved towards the lower surface of the narrow side 11 of the frame in register with each of the tongues 35, the tongues will be attracted by the magnets and will be bent towards the sloping portion of the upper surface of the narrow side 11, which is located between the limbs of the depression 33, so that the tongue will be disengaged from the web 38 and the slide will be free for displacement to the right. At this displacement the spring tongue can pass through the gap 39 in order to engage the left end wall of the recess 37, which takes place in the release position of the slide. As a consequence thereof complete withdrawal of the slide from the frame is prevented. It can be withdrawn only to the release position.

When the slide 29 is in the lock position the tongues 35 can engage the web 38 so firmly that it can be necessary to push the slide slightly inwards in order that the tongues can disengage the web under the influence of the magnetic attraction force. In order to make this possible the recess 32 must have such a depth that it allows - with the slide in the lock position - a slight movement to the left. This movement can take place against the action of a compression spring which biases the slide to the right in FIG. 6, but it is better to arrange the flange 31 at a somewhat obtuse angle to the slide as shown in FIG. 11 in order that it will take the perpendicular position under elastic bending at displacement of the slide to the left

from the lock position. The flange 31 then fills the same function as a compression spring. It is a substantial advantage in connection with robotizing of the manufacture that it is not necessary to mount a separate compression spring.

When the slide is displaced to the lock position to the left in FIG. 6 the movement at least immediately before the tongues 35 engaging the web 38, can take place against said spring action so that the engagement position can be reached only by a certain pressure being exerted on the slide. This reduces the risk that the slide unintentionally comes into lock position. If the slide is biased by a helical spring which tends to displace the slide to the release position this spring can have such a large stroke that it maintains the slide in the release position but this can also be achieved by a snap member arresting the slide in the release position.

In order to apply the anti-theft device on the box or cassette one can apply two methods. In one method the projecting portion of the slide 29 is bent downwards slightly when the slide is in the release position, i.e. when the slide is withdrawn partly from the frame (the dotted position in FIG. 6) so that the flange 30 does not block the open narrow side 19; the box or cassette can be pushed through this narrow side straightly into the frame in order to engage the flange 31 the slide then being carried on during displacement to the left to the lock position, which is disclosed by solid lines in FIG. 6 and wherein tongues 35 are in the latching position to prevent the slide from being moved to the release position. This can be effected only by the spring tongues being actuated by a magnet which shall be done in an opening apparatus constructed for this purpose in which two permanent magnets are provided and are so located that they actuate each one tongue 35 when the anti-theft device with a box or cassette inserted therein

is placed in a predetermined position in the opening apparatus. After unlocking the box or cassette is withdrawn under displacement of the slide 29 to the release position in which the box or cassette after slight bending downwards of the slide is withdrawn straightly from the frame through  
5 the open narrow side 19.

In the other method the box or cassette is located with the slide in the release position is located in the position shown by dotted lines according to FIG. 5, positioned obliquely about  $20^\circ$  between the wall 14 and the rail  
10 18, the box or cassette then being turned into the frame and thereafter being displaced to the left against the flange 31 and at continued displacement to the left carries on the slide to the locking position. When the box or cassette after unlocking shall be removed from the frame it is  
15 displaced to the right carrying on the slide 29, and when the slide is located in the release position the box or cassette is turned out of the frame to the oblique position shown by dotted lines in FIG. 5 and is then withdrawn  
20 obliquely from the frame. The distance between the wall 14 and the rail 18 in the longitudinal direction of the narrow side 11 must of course be made so large that it allows the box or the cassette to be angled in the manner described.

On the lower side of the slide 29 there is provided  
25 at one edge of the slide - the distant edge as seen in FIG. 6 - a downwardly directed flange 40 which extends a distance along the slide from the right end thereof. This flange is provided in order to prevent a less scrupulous person from inserting a blade-shaped object between the  
30 slide 29 and the narrow side 11 where it is uncovered due to the fact that the wall 14 for manufacturing reasons ends at a distance from the right end of the narrow side 11, in order to attempt to press purely mechanically the right tongue from engagement with the web 37 and unauthorized re-  
35 move the anti-theft device from the product to be protected

against theft. The flange 24 is provided for the same reason. In order to secure the slide in the lock position it is sufficient to have one spring tongue, but the risk of unauthorized removal of the anti-theft device by manipulating the spring tongues is further reduced by two or more spring tongues being provided in line and/or side by side.

The anti-theft device is wider than the box or cassette which is located in the anti-theft device, and it follows that the anti-theft device cannot be located in the display racks which are dimensioned for exposing boxes or cassettes which are not provided with this type of anti-theft device. In order to make possible that the existing display racks are used also in case the boxes or cassettes are provided with anti-theft device the frame in the embodiment shown is provided with legs 41 on the lower surface of the narrow side 11. These legs are so located and dimensioned that they fit in the conventional display racks.

## CLAIMS

1. Anti-theft device for a parallelepipedic box for CD, DVD, MC, video tapes, data games, or the like, comprising a frame of plastic material, which has two flat sides (14; 16, 17, 18) and four mutually perpendicular narrow sides (11, 12, 13, 19) to enclose the box at the flat sides and three of the narrow sides (11, 12, 13) while the fourth narrow side (19) is open for insertion of the box into the frame and withdrawal the box therefrom, a slide (29) of plastic material for retaining the box in the frame, which is located inside the frame and is plane-parallel with the narrow sides (11, 13) perpendicular to the open narrow side (19), and is guided for displacement on and along one (11) of said narrow sides between an inserted lock position and an extracted release position, the slide forming a hook-shaped end portion (30) directed towards the interior of the frame, which blocks the open narrow side (19) in the lock position of the slide, while this narrow side is uncovered in the release position of the slide, and a latch device (35, 38) for locking the slide to the frame in the lock position of the slide, characterized in that the latch device comprises a plate (34) of magnetically attractable spring steel loosely placed under the slide (29) in a depression (33) in said one narrow side (11), said plate forming a tongue (35) projecting obliquely from the plate and directed from the open narrow side (19) to engage in the lock position a shoulder (38) on the lower side of the slide.

2. Anti-theft device according to claim 1, wherein the tongue (35) is punched from the plate (34) which forms a U-shaped portion with the tongue projecting from the web of this portion and with the limbs of the portion located one on each side of the tongue and wherein the depression (33) has a U-shape matching the U-shaped portion.

3. Anti-theft device according to claim 2 wherein the portion of said one narrow side (11) located between the limbs of the depression (33) raises successively from the bottom of the U-shaped depression (33) at the web of the depression to the upper surface of said one narrow side (11).

4. Anti-theft device according to any of claims 1-3 wherein the shoulder (38) comprises a bounding wall of a recess (36) in the lower surface of the slide (29).

5. Anti-theft device according to claim 4 wherein two recesses (36, 37) are provided in the lower surface of the slide (29) and are separated by a web (38) which defines a gap (39) against said one narrow side (11) and forms said shoulder.

6. Anti-theft device according to any of claims 1-5 wherein the end of the slide (29) which is opposite to the hook-shaped end portion (30) is provided with a flange (31) forming an abutment for the box.

7. Anti-theft device according to claim 6 wherein the flange (31) forms an obtuse angle with the slide (29) to function as a compression spring under resilient yielding to perpendicular position at engagement with the narrow side (12) of the frame, which is opposite to the open narrow side (19).

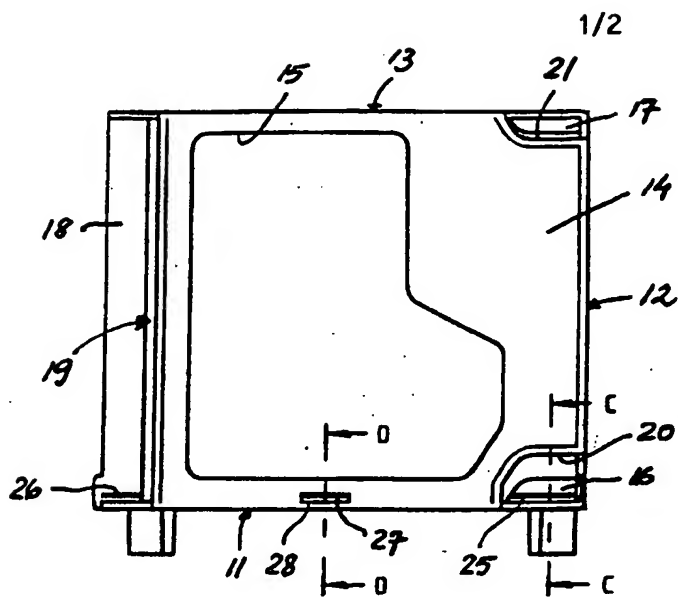


Fig. 1

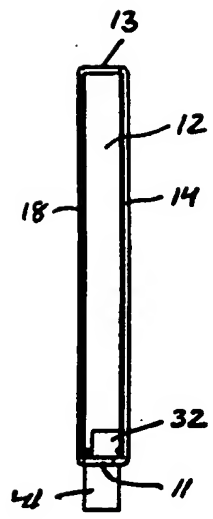


Fig. 3

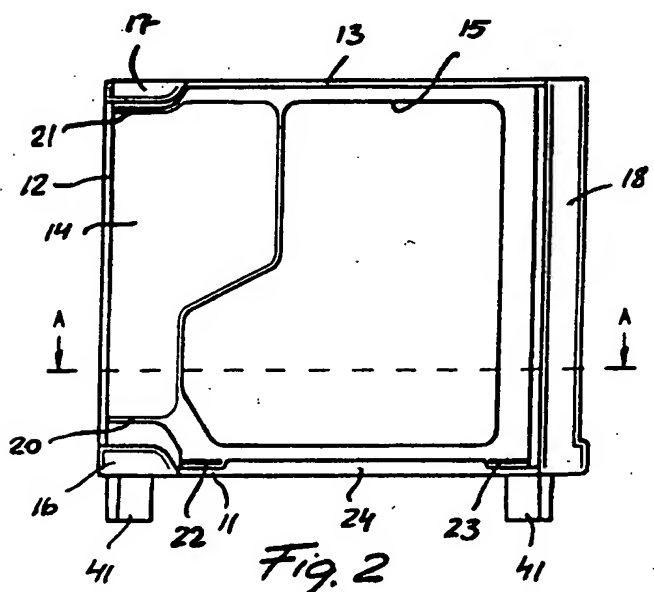


Fig. 2

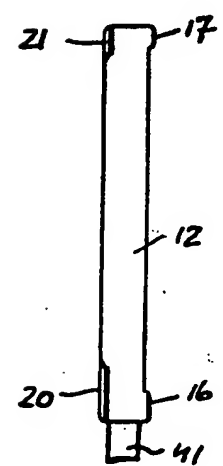


Fig. 4

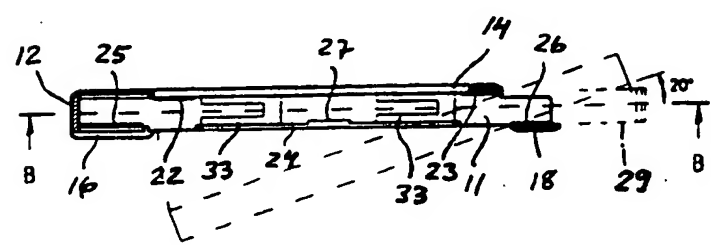
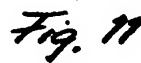
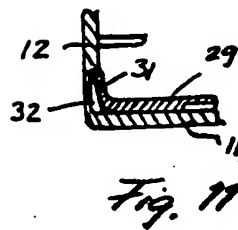
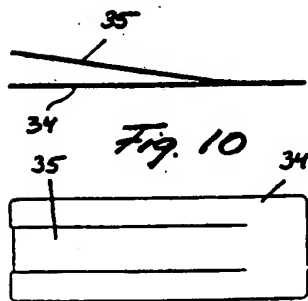
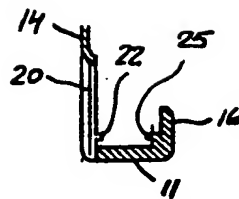
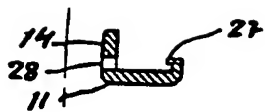
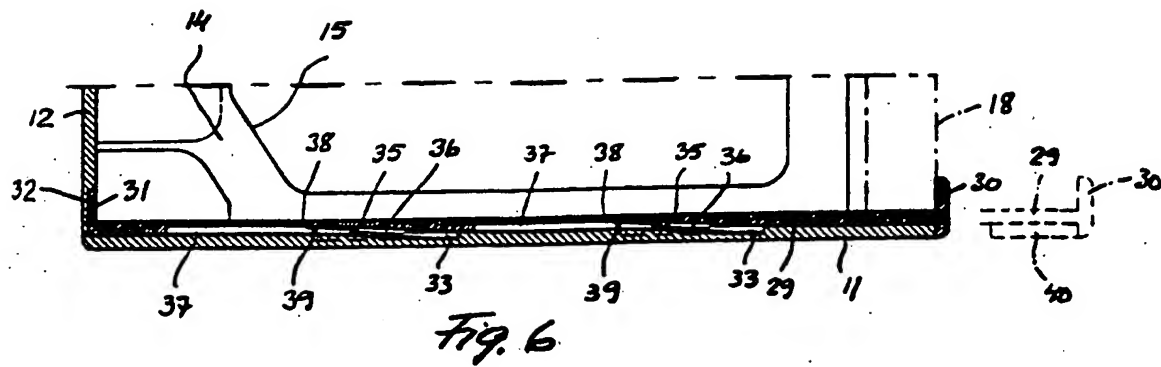


Fig. 5



## INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 00/01019

## A. CLASSIFICATION OF SUBJECT MATTER

IPC7: E05B 73/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: E05B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

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☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

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Date of the actual completion of the international search

23 August 2000

Date of mailing of the international search report

07-09-2000

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Information on patent family members

08/05/00

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